

SEAT No. _____

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No. of Printed Pages : 02

SARDAR PATEL UNIVERSITY

EXTERNAL EXAMINATION

B.Sc. INDUSTRIAL CHEMISTRY VOCATIONAL (5th -SEMESTER)

US05CICV24: (Mass Transfer)

Friday, 26th November, 2021

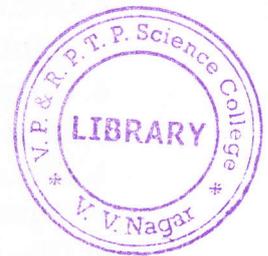
Time: 3:00 pm to 5:00 pm

Total Marks: 70

Note: Figures to the right indicate full marks.

Q.1 Answer the given multiple choice questions. (All are compulsory) [10]

1. For separating mixtures with almost same boiling point _____ distillation is used.
(a) Simple (b) Flash (c) Azeotropic (d) Steam
2. _____ is the temperature at which a liquid mixture of given composition start to Vaporize as temperature increases.
(a) Dew point (b) Bubble point
(c) Feed point (d) None of these
3. Refluxing is a feature of _____.
(a) Rectification distillation (b) Differential distillation
(c) Simple distillation (d) Flash distillation
4. Which of following is a continuous gas-liquid contactor?
(a) Plate column (b) Packed column
(c) Rectification column (d) Settler
5. In absorption insoluble component of the gas is called _____.
(a) Solute gas (b) Carrier gas
(c) Cake (d) None of these
6. Gas absorption is also term as _____.
(a) Drying (b) Scrubbing
(c) Adsorption (d) Extraction
7. _____ is the driving force for crystallization.
(a) Supersaturation (b) Saturation
(c) Scrubbing (d) Cooling
8. Leaching is _____ operation.
(a) Solid-liquid (b) Solid-solid
(c) Gas-liquid (d) Gas-Gas
9. Spray dryer is useful for drying _____.
(a) Grannules (b) Sheets
(c) Slurries (d) Powder
10. For ceramic products, _____ dryer is used.
(a) Tunnel (b) Spray (c) Tray (d) None of these



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Q.2 Are the following statements TRUE or FALSE? (All are compulsory) [08]

1. Distillation is used for separating liquid-liquid mixtures.-TRUE/FALSE?
2. Raoult's law applied to only in volatile solution. TRUE/FALSE?
3. In gas absorption packing size should not be more than $1/8^{\text{th}}$ of column diameter. TRUE/FALSE?
4. HETP is the height of a section of packing that will give the same separation as that achieved with one theoretical plate. TRUE/FALSE?
5. Magma is the mixture of mother liquor and crystals. TRUE/FALSE?
6. Extraction operation is done on the basis of difference in solubility. TRUE/FALSE?
7. In falling rate period, rate of drying increases. TRUE/FALSE?
8. Drum dryer is useful for drying sheets. TRUE/FALSE?

Q.3 Answer the following short questions (Attempt any 10 out of 12) [20]

1. Define a term relative volatility.
2. What is reflux ratio?
3. State Raoult's law and Dalton's law.
4. Give comparison between absorption & distillation.
5. Enlist various types of packings.
6. Define the term raffinate with reference to extraction.
7. Enlist the factors affecting the rate of leaching.
8. Give classification of crystalliser.
9. Define the term super saturation.
10. Give comparison between Evaporation & Drying.
11. Define the term relative humidity & absolute humidity.
12. Enlist various accessories used in evaporator.



Q.4 Answer the following Long questions (Attempt any 4 out of 8) [32]

1. With neat sketch discuss the fractionating column in detail.
2. Write stepwise procedure for determination of theoretical plate in distillation column by using McCabe-Thiele method.
3. Write about mixer settler battery for counter current extraction.
4. Discuss about packed column used in gas absorption with neat and clean diagram.
5. Give construction and working of Basket extractor with suitable diagram
6. Explain about vacuum crystalliser with suitable diagrams.
7. Explain in details about forward feed evaporator.
8. Write construction and working of tray dryer with neat diagram.

← X →

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